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# 1998 VIRTUAL STRIKE WARFARE SIMULATION AND ANALYSIS EVENTS

WRIGHT-PATTERSON AFB  
JOINT STRIKE FIGHTER  
VIRTUAL SIMULATION BASED  
ACQUISITION TEAM

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# TEAM OBJECTIVES

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- Build a world-class strike warfare simulation environment for the Joint Strike Fighter program;
- Leverage existing work and commercial tools to the maximum extent possible to avoid costs; and
- Collaborate with other programs and agencies to collectively increase the utility of the tools for common use.

**100% Success in Achieving Objectives**



# SCOPE

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- People: 45 engineers, scientists, & managers
- Budget
  - \$1.2M JSF funding
  - 9,000 man-hours of government personnel
  - Contractor IR&D and SBIR funding
- Number of models/lines of code
  - 9 highly integrated models plus databases
  - Over 250,000 lines of new software written
  - Over 2,000,000 lines of code plus several Gigabytes of data



# TRUE “FIRSTS”

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- Developed the Analysis Process
  - Use of Virtual Analysis to guide Constructive Analysis
  - Analytical results extracted from Virtual Simulation this early in an acquisition program
- Conducted On/Off Board Trade Studies
- Conducted Robust Evaluation of a Real-Time Mission Planner
- Developed Intra-flight Imagery capability for the cockpit sim
- Developed Off-board Imagery capability for the cockpit sim
- Developed sophisticated scenario planning and de-briefing tools to streamline the development and analysis process



# NOTEWORTHY ACCOMPLISHMENTS

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- True Integrated Product Team
  - Overcame problems of organization boundaries
- Conducted 2 air-to-air and 2 air-to-ground simulations
  - Within 10 months after project approval
  - 98% system availability
  - 50 Pilots: Air Force, Navy, Marines & International partners
  - 24 Days of testing
  - Customer response: “You guys are right on target.”
- AFOTEC/CC briefed and shown capability
  - Estimated 7 year reduction of some portions of the CONOPS development process
- Leveraged over \$5.7M in labor and hardware to create the environment in the simulation facility



# IMPACTS



- Cost savings and avoidance
  - Leveraged cross-program capabilities
    - Government (AFRL) owned software--saved \$650K
    - Use of COTS where appropriate
    - AFRL                      \$1.1M labor              \$2.0M equipment
    - ASC                      \$ 450K labor              \$250K equipment
    - SIMAF                      \$ 25K labor              \$1.5M equipment
    - NAIC                      \$ 15K labor
  - Potential to avoid the costs of the firsts several ECPs that most programs suffer from due to a lack of early understanding of the CONOPS



## IMPACT (CONTINUED)

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- Improved dialogue with warfighters which has resulted in a CONOPS that is more mature at this phase in a program than ever before



